

REMARKS

Claim status

Claims 1-31 were pending in the case at the time of the current Office Action. Claims 1, 13, 24, and 27 are currently amended herein. Claims 1-31 are currently pending in the application.

Section 112 rejections

In the current Office action, claims 1, 13, 24, and 27 are rejected under 35 U.S.C. 112, first paragraph as failing to comply with the enablement requirement. The specification does not support for all three conditions “at; to; at and/or to” in claims 1, 13, 24, and 27.

In the current Office action, claims 1, 13, 24, and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

Applicants respectfully traverse the foregoing rejections in view of the above pending claims and for reasons set forth hereafter.

Paragraph [0028] of the specification clearly states, “an electrically conductive ground plane 20 that is located at and/or to a second side of the imaginary plane 16”. This clearly shows support for this language in the specification. However, claims 1, 13, 24, and 27 have been amended herein to make it clear what was intended by the language “at and/or to”, that is, how the ground plane is disposed relative to the imaginary plane. In particular, the amended claims refer to the ground plane being located in the same plane as the imaginary plane or being located spaced away from the imaginary plane on a second side of the imaginary plane. These ground plane dispositions are clearly illustrated in at least Fig. 1 and Fig. 4 of the drawings of the specification.

Therefore, in view of at least the foregoing, it is respectfully submitted that amended claims 1, 13, 24, and 27 overcome any enablement and indefiniteness problems. Applicants respectfully request that the rejections of claims 1, 13, 24, and 27 under 35 U.S.C. 112 be removed.

Allowable Subject Matter

Claims 24-30 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in the current Office action.

Applicants believe that the 35 U.S.C. 112 rejections have been overcome as stated above and that claims 24-30 should be allowed.

Section 103 rejections

In the current Office action, claims 1-4, 9-12, 13-16, and 18-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (US 4253099).

Applicants respectfully traverse the foregoing rejections in view of the above pending claims and for reasons set forth hereafter.

Independent claim 1 recites a multi-polarized antenna for transmitting and/or receiving radio frequency (RF) signals, said antenna comprising:

at least two radiative antenna elements each having a first end and a second end, and wherein said second ends of said radiative antenna elements are electrically connected at an apex point and are each disposed outwardly away from said apex point at an acute angle relative to and on a first side of an imaginary plane intersecting said apex point; and

an electrically conductive ground plane located in the same plane as said imaginary plane or located spaced away from said imaginary plane on a second side of said imaginary plane.

Independent claim 13 recites a method to construct a multi-polarized antenna for transmitting and/or receiving radio frequency (RF) signals, said method comprising:

generating at least two radiative antenna elements each having a first end and a second end and each being tuned to a predetermined radio frequency;

electrically connecting said second ends of said radiative antenna elements at an apex point such that each radiative antenna element is disposed outwardly away from said apex point at an acute angle relative to and on a first side of an imaginary plane intersecting said apex point; and

positioning an electrically conductive ground plane in the same plane as said imaginary plane or spaced away from said imaginary plane on a second side of said imaginary plane.

It is respectfully submitted that Yamazaki et al. (U.S. Pat. No. 4,253,099), hereinafter Yamazaki, does not teach or suggest the invention of independent claims 1 or 13. In particular, Yamazaki does not teach or suggest an electrically conductive ground plane as does the claimed invention. The Examiner seems to suggest that the elements 2a and 2b of Figure 1 of Yamazaki constitute an electrically conductive ground plane. However, as stated in column 2 line 40, elements 2a and 2b are telescoping rod antennas, not a ground plane. In fact, Yamazaki does not discuss a ground plane at all. Furthermore, Yamazaki does not discuss any relationship between radiative antenna elements and a ground plane with respect to an imaginary plane of any kind, as does the claimed invention. The polarization properties achieved by the claimed invention would not be achieved by the configuration of Yamazaki at least because of the lack of a ground plane in the Yamazaki configuration. Yamazaki does not discuss polarization properties in any way.

Therefore, in view of at least the foregoing, it is respectfully submitted that independent claims 1 and 13 are not unpatentable over Yamazaki, and it is respectfully submitted that independent claims 1 and 13 define allowable subject matter. Also, since claims 2-4, 9-12, 14-16, and 18-23 depend either directly or indirectly from claims 1 or 13, it is respectfully submitted that these dependent claims define allowable subject matter as well. Applicants respectfully request that the rejection of claims 1-4, 9-12, 13-16, and 18-23 under 35 U.S.C. 103(a) be removed.

In the current Office action, claims 5-8, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (US 4253099) in view of Vinson et al. (US 6100855).

Applicants respectfully traverse the foregoing rejections in view of the above pending claims and for reasons set forth hereafter.

As described previously herein, Yamazaki does not teach or suggest the invention of independent claims 1 and 13. Similarly, the combination of Yamazaki and Vinson et al. (US 6100855), hereinafter Vinson, does not teach or suggest the invention of independent claims 1 and 13. Vinson describes a RAM (radar absorbing material) 14 interspersed with radials 16 to form a ground plane. A patch antenna 10 is also provided. There is nothing in Yamazaki or Vinson that suggests modifying the configuration of Yamazaki with the elements of Vinson to come up with the antenna and ground plane configuration of the claimed invention for the purpose of multi-polarization. Similarly, there is nothing in Yamazaki or Vinson that suggests modifying the configuration of Vinson with the elements of Yamazaki to come up with the antenna and ground plane configuration of the claimed invention for the purpose of multi-polarization. Yamazaki and Vinson are silent with respect to any kind of multi-polarization properties. Also, the claimed invention has nothing to do with radar absorbing material (RAM) as does Vinson. The configuration of Vinson is to provide a good front-to-back ratio in a small configuration, whereas, the configuration of the claimed invention is to provide good multi-polarization properties. Also, Vinson describes that the antenna 10 is in electrical contact with the ground plane 12 (made up of RAM 14 and radials 16). The claimed invention does not have the ground plane in electrical contact with the radiative antenna elements since this would destroy the multi-polarization properties achieved by the claimed invention.

Therefore, in view of at least the foregoing, it is respectfully submitted that independent claims 1 and 13 are not unpatentable over Yamazaki in view of Vinson, and it is respectfully submitted that independent claims 1 and 13 define allowable subject matter. Also, since claims 5-8 and 17 depend either directly or indirectly from claims 1 or 13, it is respectfully submitted that these dependent claims define allowable subject matter as well. Applicants respectfully request that the rejection of claims 5-8 and 17 under 35 U.S.C. 103(a) be removed.

In the current Office action, claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (US 4253099) in view of Kleinschmidt (US 6714170).

Applicants respectfully traverse the foregoing rejections in view of the above pending claims and for reasons set forth hereafter.

As described previously herein, Yamazaki does not teach or suggest the invention of independent claim 13. Similarly, the combination of Yamazaki and Kleinschmidt et al. (US

6714170), hereinafter Kleinschmidt, does not teach or suggest the invention of independent claim 13. Kleinschmidt describes using a motor in conjunction with a satellite dish. There is nothing in Yamazaki or Kleinschmidt that suggests modifying the configuration of Yamazaki with the elements of Kleinschmidt to come up with the antenna and ground plane configuration of the claimed invention of claim 13 for the purpose of multi-polarization. Similarly, there is nothing in Yamazaki or Kleinschmidt that suggests modifying the configuration of Kleinschmidt with the elements of Yamazaki to come up with the antenna and ground plane configuration of the claimed invention of claim 13 for the purpose of multi-polarization. Yamazaki and Kleinschmidt are silent with respect to any kind of multi-polarization properties and with respect to any kind of ground plane.

Therefore, in view of at least the foregoing, it is respectfully submitted that independent claim 13 is not unpatentable over Yamazaki in view of Kleinschmidt, and it is respectfully submitted that independent claim 13 defines allowable subject matter. Also, since claim 31 depends either directly or indirectly from claim 13, it is respectfully submitted that this dependent claim defines allowable subject matter as well. Applicants respectfully request that the rejection of claim 31 under 35 U.S.C. 103(a) be removed.

Accordingly, the Applicant respectfully requests reconsideration of the rejections and objections based on at least the foregoing. After such reconsideration, it is urged that allowance of claims 1-31 will be in order.

Respectfully submitted,



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